

VS Id#	Vital Sign Category			Vital Sign	Network Rank	HAVO
F4	Freshwater Ecosystems	Consumers	Population	Amphidromous Fauna Size-Age Structure, Reproduction and Recruitment	2.1	
H10	Park Use & Activities			Subsistence Farming/Agriculture	1.2	
H12	Park Use & Activities			Coral/Sand Mining Harvest	1.2	
H14	Park Use & Activities			Culturally Significant Vertebrate Species Harvest	1.6	
H15	Park Use & Activities			Reef Fisheries Harvest	2.6	
M01	Marine Ecosystems	Benthic	Landscape	Coral Growth (erosion & accretion)	2.7	
M02	Marine Ecosystems	Benthic	Landscape	Benthic Habitats	2.6	
M03	Marine Ecosystems	Benthic	Community	Benthic Marine Invertebrates and Algae Biodiversity	2.8	
M04	Marine Ecosystems	Benthic	Community	Subtidal - Hard Bottom (coral reef, colonized basalt, etc.)	2.7	
M05	Marine Ecosystems	Benthic	Community	Subtidal - Soft Bottom (sand flat, seagrass bed)	2.4	
M06	Marine Ecosystems	Benthic	Population	Benthic Reef Fisheries / Collected species (inverts: sea cucumbers, pololo worm, corals; etc)	2.7	
M07	Marine Ecosystems	Benthic	Population	Benthic Marine Invertebrates and Algae	2.7	
M08	Marine Ecosystems	Benthic	Population	Coral Growth/Size and Age Structure, and Recruitment	2.6	
M09	Marine Ecosystems	Benthic	Population	Established Coral Disease & Pathogens (including bleaching)	2.4	
M10	Marine Ecosystems	Benthic	Population	Alien Incipient Coral Disease & Pathogens	2.5	
M11	Marine Ecosystems	Benthic	Population	Established Alien Species - Benthic Marine	2.7	
M12	Marine Ecosystems	Benthic	Population	Alien Incipient Invasives - Benthic Marine	2.8	
M15	Marine Ecosystems	Water column (motile)	Population	Established Marine Animal (other than turtles) Disease & Pathogens	1.9	
M23	Marine Ecosystems	Intertidal	Community	Intertidal - Hard Bottom	2.2	
M24	Marine Ecosystems	Intertidal	Community	Intertidal - Soft Bottom (sand beach, mudflat, mangrove)	2.6	
P20	Water Quality			Ground Water Quality Core parameters	2.8	
P21	Water Quality			Marine Water Quality Core parameters	3.3	
P23	Water Quality			Ground Water Quality Supplemental parameters	2.6	
P29	Water Quality			Ground Water Quality - Toxics & contaminants	2.8	
P32	Water Quality			Marine Water Quality - macroinvertebrates	2.8	
P33	Water Quality			Surface Water Quality - macroinvertebrates	2.6	
P40	Geology	Landforms		Dune Change (erosion & accretion)	0.9	
P44	Geology	Landforms		Cave Geology: karst	0.9	
T13	Terrestrial Ecosystems	Vegetation	Population	Native Plant Species Protection (T, E, S-o-C species)	4.0	4.5
T29	Terrestrial Ecosystems	Consumers	Population	Terrestrial Invertebrate Species Protection (T, E, S-o-C Species)	2.9	4.5
T06	Terrestrial Ecosystems	Vegetation	Community	Terrestrial Plant Biodiversity	3.6	4.3
T17	Terrestrial Ecosystems	Vegetation	Population	Alien Incipient Invasive Plants	3.7	4.3
T18	Terrestrial Ecosystems	Consumers	Community	Terrestrial Invertebrate Biodiversity	2.9	4.3
T31	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Disease & Pathogens of Terrestrial Vertebrates	2.5	4.3
P02	Climate & Air Quality			Atmospheric Deposition: Wet (direct & occult) and Dry	2.1	4.2
T37	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Predatory Terrestrial Vertebrate	3.3	4.1
F2	Freshwater Ecosystems	Consumers	Community	Aquatic and Riparian Species (vertebrate and invertebrate) Biodiversity	3.5	4.0
F6	Freshwater Ecosystems	Consumers	Population	Alien Incipient Invasives - Predatory Freshwater (vertebrate and invertebrate)	2.8	4.0
P03	Climate & Air Quality			Atmospheric Gases: Climate Change Indicators, Human Pollutants, Natural-Volcanic	2.2	4.0
T05	Terrestrial Ecosystems	Vegetation	Landscape	Forest Dieback	1.5	4.0
T16	Terrestrial Ecosystems	Vegetation	Population	Established Alien Species - Plants	4.0	4.0
P37	Geology	Hazards		Seismicity of Volcanic Origin	1.8	3.9
T07	Terrestrial Ecosystems	Vegetation	Community	Long-term Plant Succession	3.5	3.9
T08	Terrestrial Ecosystems	Vegetation	Community	Recovery/Change of Native Vegetation with Alien Plant Control	3.5	3.9
T09	Terrestrial Ecosystems	Vegetation	Community	Recovery/Change of Native Vegetation with Feral Ungulate Control	2.4	3.9
T10	Terrestrial Ecosystems	Vegetation	Community	Recovery/Change of Native Vegetation with Invasive Alien Invertebrate Control	1.8	3.9
T19	Terrestrial Ecosystems	Consumers	Community	Terrestrial Vertebrate (including off-shore islets refugia) Biodiversity	3.3	3.9
T20	Terrestrial Ecosystems	Consumers	Community	Recovery/Change of Native Invertebrates Communities with Native Plant Restoration	2.5	3.9
T21	Terrestrial Ecosystems	Consumers	Community	Recovery/change of Native Wildlife and habitats (including wetlands) with restoration of native vegetation	3.2	3.9
T23	Terrestrial Ecosystems	Consumers	Population	Forest Birds and Bats (includes T & E spp.)	3.1	3.9
T38	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Fungi	2.0	3.9
T39	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Terrestrial Invertebrates	2.2	3.9
T40	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Vertebrates	2.6	3.9
F3	Freshwater Ecosystems	Consumers	Population	Freshwater Animals Disease & Pathogen	2.2	3.8
H04	Land Use			Alien Invasive Species Points of Entry	3.4	3.8
P18	Soil, Water, & Nutrient Dynamics			Wetlands (incl. anchialine pools) hydrology	3.2	3.8
T14	Terrestrial Ecosystems	Vegetation	Population	Established Plant Disease & Pathogens	2.9	3.8
T15	Terrestrial Ecosystems	Vegetation	Population	Alien Incipient Plant Disease & Pathogens	2.6	3.8
T26	Terrestrial Ecosystems	Consumers	Population	Seabirds (including T & E spp.)	3.5	3.8
P05	Climate & Air Quality			Atmospheric Particulates: Climate Change Indicators, Human Pollutants, Natural-Volcanic	2.2	3.7
T33	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Invasive Terrestrial Invertebrate Pests of natural systems	2.4	3.7
H16	Management Zones			Management Zone uses	3.1	3.6
T04	Terrestrial Ecosystems	Vegetation	Landscape	Fire Effects & Dynamics: Vegetation and Landscape Level	2.5	3.6
T32	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Feral Ungulates	2.4	3.6
T34	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Predatory Terrestrial Vertebrates	3.4	3.6
H17	Management Zones			Wilderness Areas - HAVO, HALE, other Unofficial	1.1	3.5
P42	Geology	Landforms		Cave Environmental conditions	2.0	3.5
T41	Terrestrial Ecosystems	Cave Systems	Community	Cave & lava tube communities	2.0	3.5
P15	Soil, Water, & Nutrient Dynamics			Soil Quality- Physical	2.3	3.4
T28	Terrestrial Ecosystems	Consumers	Population	Terrestrial Invertebrates Associated with Habitat Quality	2.7	3.4
F5	Freshwater Ecosystems	Consumers	Population	Established Alien Species - Predatory Freshwater (vertebrate and invertebrate)	2.9	3.4
P01	Climate & Air Quality			Visibility	2.9	3.4
P06	Climate & Air Quality			Solar radiation	2.7	3.4
P28	Water Quality			Surface Water Quality - Microbiology	2.9	3.4
P31	Water Quality			Surface Water Quality - Toxics & contaminants	3.7	3.4
F1	Freshwater Ecosystems	Producers		Community dynamics of primary producers	2.5	3.3
H01	Soundscapes			Alien, Natural, Human Soundscapes	2.6	3.3
P08	Climate & Air Quality			Extreme events (weather & ocean)	3.0	3.3
P35	Geology	Hazards		Volcanic Unrest - Lava Flows	1.2	3.3
P25	Water Quality			Surface Water Quality Supplemental parameters	3.5	3.2
P43	Geology	Landforms		Cave Geology: non-karst	2.2	3.2
H03	Viewscapes / Lightscapes			Lightscape & Night sky	2.7	3.1
P09	Climate & Air Quality			Climate Representations - 2- & 3- dimensional	1.7	3.1
T03	Terrestrial Ecosystems	Vegetation	Landscape	Landscape Fragments, Patch Size, Land Cover	2.6	3.1
T11	Terrestrial Ecosystems	Vegetation	Population	Invertebrate Biocontrol of Plants	1.7	3.1
T12	Terrestrial Ecosystems	Vegetation	Population	Plant Pathogen Biocontrol of Plants	1.6	3.1
T22	Terrestrial Ecosystems	Consumers	Population	Invertebrate Biocontrol of Invertebrates	1.7	3.1
T25	Terrestrial Ecosystems	Consumers	Population	Invertebrate Charismatic or Species of Concern	3.2	3.1
H02	Viewscapes / Lightscapes			Viewsheds	2.7	3.0
H05	Land Use			Water Use(s) Within & Surrounding Parks	3.0	3.0
P07	Climate & Air Quality			Weather & Climate	3.4	3.0
P12	Soil, Water, & Nutrient Dynamics			Soil Erosion	2.9	3.0
P34	Geology	Hazards		Volcanic Unrest - Ground Deformation	1.4	3.0
T01	Terrestrial Ecosystems	Vegetation	Landscape	Soil and Pollen Landscape History	2.3	3.0
H06	Land Use			Land Use(s) Within & Surrounding Parks	3.4	2.8
H09	Park Use & Activities			Footprint & Visitor Use Patterns	3.3	2.8
H11	Park Use & Activities			Bio-prospecting Harvest	1.9	2.8

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H13	Park Use & Activities			Culturally Significant Plant Harvest	2.5	2.8
M16	Marine Ecosystems	Water column (motile)	Population	Established Turtle Disease & Pathogens	2.9	2.8
P04	Climate & Air Quality			Marine Aerosols	1.4	2.8
P13	Soil, Water, & Nutrient Dynamics			Soil Quality - Biological	1.7	2.8
T02	Terrestrial Ecosystems	Vegetation	Landscape	Ecozone Boundaries	2.1	2.8
T24	Terrestrial Ecosystems	Consumers	Population	Herps (native)	1.7	2.8
T27	Terrestrial Ecosystems	Consumers	Population	Shorebirds and Waterbirds (including T & E spp.)	3.3	2.8
T30	Terrestrial Ecosystems	Consumers	Population	Established Disease & Pathogens of Terrestrial Vertebrates	2.5	2.8
P14	Soil, Water, & Nutrient Dynamics			Soil Quality- Chemical	1.9	2.6
P11	Soil, Water, & Nutrient Dynamics			Biogeochemical Cycles - Nutrient Cycling	2.5	2.5
H07	Park Use & Activities			Litter/debris	3.1	2.0
M19	Marine Ecosystems	Water column (motile)	Population	Fish Growth/Size and Age Structure, and Recruitment	3.2	2.0
P22	Water Quality			Surface Water Quality Core parameters	3.6	2.0
P26	Water Quality			Ground Water Quality - Microbiology	2.9	2.0
P39	Geology	Landforms		Coastal Shoreline Change (erosion & accretion)	3.2	2.0
T35	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Terrestrial Invertebrate Pests (agricultural)	1.8	1.2
M22	Marine Ecosystems	Intertidal	Community	Intertidal Biodiversity - Vertebrates, Invertebrates, and Algae	3.1	1.0
M25	Marine Ecosystems	Intertidal	Population	Intertidal Reef Fisheries / Collected species (limu, opih, crabs, fish, etc.)	2.3	1.0
M26	Marine Ecosystems	Intertidal	Population	Intertidal Marine Invertebrates, Fish, and Algae	3.0	1.0
M27	Marine Ecosystems	Intertidal	Population	Established Alien Species - Intertidal Marine	2.5	1.0
M28	Marine Ecosystems	Intertidal	Population	Alien Incipient Invasives - Intertidal Marine	2.6	1.0
P38	Geology	Hazards		Mass Geologic Wasting	1.6	1.0
T36	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Terrestrial Invertebrate Pests (human structures)	1.9	1.0
H08	Park Use & Activities			Marine Recreational Activities & Groundings/Anchor Damage	2.5	0.0
M13	Marine Ecosystems	Water column (motile)	Community	Water Column Marine Vertebrates and Invertebrates Biodiversity	2.8	0.0
M14	Marine Ecosystems	Water column (motile)	Population	Water Column Reef Fisheries	2.2	0.0
M17	Marine Ecosystems	Water column (motile)	Population	Established Alien Species - Water Column Marine	2.5	0.0
M18	Marine Ecosystems	Water column (motile)	Population	Water Column Marine Invertebrates	2.8	0.0
M20	Marine Ecosystems	Water column (motile)	Population	Marine Species Protection (T, E, S-o-C species)	3.3	0.0
M21	Marine Ecosystems	Water column (motile)	Population	Alien Incipient Invasives - Water Column Marine	2.1	0.0
P10	Soil, Water, & Nutrient Dynamics			Ocean/Physical Dynamics: Currents, Sea Level, Tides/Swell	2.7	0.0
P16	Soil, Water, & Nutrient Dynamics			Soil Crust Change (Arid-Semiarid habitats)	0.9	0.0
P17	Soil, Water, & Nutrient Dynamics			Flowing surface water hydrology	2.7	0.0
P19	Soil, Water, & Nutrient Dynamics			Groundwater dynamics	2.4	0.0
P24	Water Quality			Marine Water Quality Supplemental parameters	2.9	0.0
P27	Water Quality			Marine Water Quality - Microbiology	2.8	0.0
P30	Water Quality			Marine Water Quality - Toxics & contaminants	3.0	0.0
P36	Geology	Hazards		Seismicity of Non-Volcanic Origin	1.9	0.0
P41	Geology	Landforms		Permafrost on Big Island summits	0.0	0.0